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WAR DEPARTMENT
CLIMATIC RESEARCH LABORATORY
LAWRENCE, MASSACHUSETTS

Monthly Report - May 1, 1943

Summary of Activities of Climatic Research Laboratory since Activation
by the War Department on January 19, 1943.

1. Personnel

Military

Civilian

Officers

John H. Talbott
Lt. Col., M. C.
Commanding Officer

Richard L. Day, M.D.
Senior Physiologist

William D. Allers
Captain, M. C.

Phoebe J. Crittenden, Ph. D.
Associate Physiologist

Walter B. Rust
1st Lt., Q.M.C.
Executive Officer

Alexis I. Shelokov
Junior Physiologist

Enlisted Men

Harold Hanson,	T/4th
John Johnson	T/4th
George A. Knox,	T/4th
John E. Moffat,	T/4th
Richard Tubesing	T/4th
Solomon Camitta,	T/5th
John Mitchell,	T/5th
Vincent Sullivan	T/5th
Chester Taraskiewicz,	T/5th
Robert Tashgy,	T/5th
Clifford Tornell,	T/5th
Charles Wilson,	T/5th
Raymond Albanese,	Pfc.
George Jakle,	Pfc.
Donald Peterson,	Pfc.
John Anderson,	Pvt.
John Maksuta,	Pvt.
Wesley Mautte,	Pvt.
James McCarthy,	Pvt.
Frank Surprenant,	Pvt.

Month. Rpt. Climat. Res. Labort.
U. S. Army

CLASSIFICATION CHANGED	
TO	RESTRICTED UNCLASSIFIED
AUTH	Letter QMRDW-I
DATE	12 Oct 54
SECURITY OFFICER	
<i>Frank B. Rogers</i>	

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U.S. Quartermaster Corps. Climatic Research
Laboratory, Lawrence, Mass.

STANDARD FORM NO. 100-10

REPORT OF RESEARCH

1. Title of Research: *Investigation of the effect of humidity on the stability of certain types of explosives*

2. Author: *W. H. ...*

3. Summary: *This report describes the results of an investigation into the effect of humidity on the stability of certain types of explosives. The experiments were conducted in a specially constructed chamber in which the humidity could be varied at will. The results show that the stability of the explosives is affected in a marked manner by the humidity of the atmosphere.*

4. Introduction: *The purpose of this investigation was to determine the effect of humidity on the stability of certain types of explosives. It was found that the stability of the explosives is affected in a marked manner by the humidity of the atmosphere.*

5. Materials and Methods: *The experiments were conducted in a specially constructed chamber in which the humidity could be varied at will. The humidity was varied by means of a system of pipes and valves which allowed the air to pass through a series of wash bottles containing water of different temperatures.*

6. Results: *The results of the experiments show that the stability of the explosives is affected in a marked manner by the humidity of the atmosphere. The stability of the explosives is increased as the humidity of the atmosphere is increased.*

7. Conclusions: *It is concluded that the stability of the explosives is affected in a marked manner by the humidity of the atmosphere. The stability of the explosives is increased as the humidity of the atmosphere is increased.*

8. Recommendations: *It is recommended that further investigation be made into the effect of humidity on the stability of other types of explosives.*

9. References: *1. U. S. Army, Department of the Army, Office of the Quartermaster General, "Explosives," 1918.*

10. Appendix: *See Appendix A for details of the experimental apparatus.*

11. Distribution: *One copy of this report is being furnished to the following organizations:*

12. Signature: *W. H. ...*

2. Installations and Equipment In Use

Cold room 12' x 33' with provision for a wind tunnel 7' x 12' in addition to the above space. Temperature range of cold room as low as minus 90°F. Body harness for all of experimental subject with 18 thermocouple leads. Brown potentiometer for 120 thermocouple leads. Four Micromax boxes with 16 thermocouple leads each. Several L. & N. potentiometers. One 600 liter Tissot Gasometer. Five 120 liter Tissot Gasometers, Treadmill by Young in cold room. Bureau of Standards Mannequin.

3. Reports

The following reports have been sent to the Office of The Quartermaster General, attention Colonel D. H. Cowles and Colonel G. F. Doriot.

Report No. 10, March 18, 1943 - Pneumatic Tent

This was an especially designed rubber tent, made by Herran and Meyer, New York City and tested at the request of Colonel E. Santschi. The tent was designed as an emergency tent for an aircraft crew and not as a piece of portable equipment for land troops. It was a remarkable tent in ability to withstand wind velocity as high as 90 miles per hour. However, it was not recommended as a production item for the United States Army.

Report No. 11-A, March 19, 1943 - Stoves, Aladdin Type

Description of work done on gasoline stoves in below zero temperatures. Several defects apparent in this temperature range.

Report No. 12, March 31, 1943 - Cardboard Cartons

Test of new Quartermaster Carton after being water-soaked and cooled at minus 50°F. Boxes stood test well.

Report No. 13, April 16, 1943 - Handgear, Protection Against Cold

Regulation woolen mitten, cotton and leather shell and wrist-lets. The number of exposure hours was approximately 250. The exposure temperatures varied between plus 24°F. and minus 52°F. For subjects at rest, the tips of the fingers will be protected against the cold for approximately 90 minutes when exposed to an environmental temperature of 0°F; for 60 minutes when exposed to a temperature of minus 20°F. and for 40 minutes when exposed to a temperature of minus 40°F.

Report No. 16, April 29, 1943 - Insulating Jugs

Four types of insulating jugs were studied at room temperature and at temperatures as low as minus 24°F. The jugs in order of thermal insulating property for hot liquids were:

- (1) Landers Fravy Clarke Jug
- (2) Standard Jug with Santocel Insulation and Enamel Lining
- (3) Standard Jug
- (4) Vacuum Jug made by Vacuum Can Company

Report No. 17, April 28, 1943 - Trousers, Cold Climate

Nine pairs of trousers of varying quality serge and one pair of alpaca pile trousers, with and without a windproof over-trouser, were studied. Eight subjects were used in the test and were exposed to more than 300 individual hours in the cold chamber. The temperature for all of the experiments was plus 20°F. The subjects were studied at rest and after exercise, with a wind velocity of 2-3 miles per hour and with a wind velocity of 6-7 miles per hour. Several physical tests of swatches of the fabrics were conducted independently.

It is concluded that No. 6 was the best all-around serge fabric in the several tests. The specifications for this fabric are, 31 oz. fulled serge, O.D. Piece 1291-C. The next best serge fabric was No. 8 with specifications, 18 oz. serge, O.D. Piece 1288-1. The alpaca pile trouser (50% mohair, 50% alpaca, 5/8" pile) compared favorably with No. 6, but was not judged to be superior to it. The kersey lined trouser was inferior to No. 6 when the latter was worn with a cotton sateen over-trouser.

4. Projects In Preparation

Pile garments, Proposed T.B.A. Artic Clothing, (inner and outer pile parka and trousers, over-white parka and trousers) are being studied at sub-zero temperatures down to minus 55°F. Same work is being done on single piece, double wool, white pile garment.

Sleeping Bags, Proposed T.B.A., inner and outer case, wind-proof shell. Outer and Inner cases of varying weights and insulation materials. These are being tested during 5-6 hour exposures at temperatures as low as minus 65°F.

Surface Area Measurements. The various types of clothing and sleeping bags are being measured for surface area as a function of insulating property.

Thermal insulating property of fabrics is being measured on Bureau of Standards Mannequin.

5. Expansion of Present Facilities

Leasing of additional space is already underway to provide for barracks for enlisted men; mess hall and diet kitchen for dietary studies; chemical laboratory and physiological laboratory.